

NOTES ON PSYLLIDAE FROM SADO ISLAND, NIIGATA PREFECTURE
(HEMIPTERA : HOMOPTERA)*

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As reported by the junior author in 1969, 43 species of psyllids have been known from Niigata Prefecture up to the present. However, any species has not been recorded yet from Sado Island which is about 30 km west of Niigata City and located in the Japan Sea from 37°48' to 38°20' N latitude and from 130°12' to 138°35' E longitude.

In the present paper, 23 species of psyllids are recorded from Sado Island, basing upon the material which the authors obtained during their survey of the island from July 20 to July 23 in 1970. All of them are accordingly recorded from Sado Island for the first time. Among them, *Trichochermes grandis* Log. is new addition to the psyllid fauna of Japan and three species, *Psylla fulguralis*, *P. hederæ* and *P. pulchra* are new additions to that of Niigata Prefecture.

In general, the psyllid fauna of Sado Island is very similar to that of the main land part of Niigata Prefecture. However, the southern coast, especially around Ogi-machi, is characteristically invaded by some south elements, e. g. *Psylla fulguralis*, *P. hederæ*, *Trioza machilicola*, etc. This area is considerably rich in warm temperate vegetation and seems to furnish a good habitat for such species, possibly under the influence of the Tsushima Warm Current running closely.

Furthermore, there seems to be some difference in the psyllid fauna between the northern mountain range ("Oosado") and the southern one ("Kosado"), as seen in *Aphalara itadori* which occurs only in

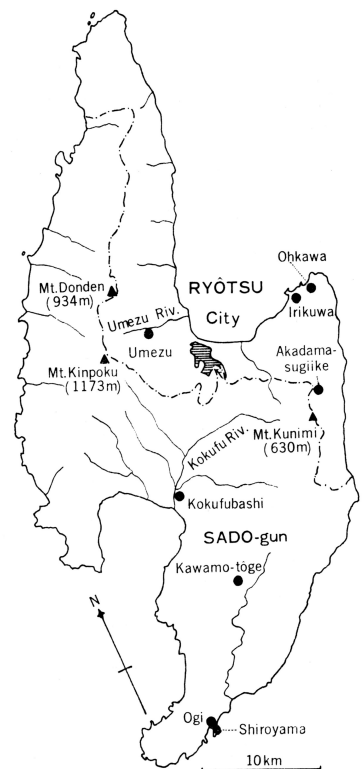


Fig. 1. Sketch map of Sado Island showing the collecting localities.

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the southern mountain range. Some common species in Niigata Prefecture, *e.g.* *Anomoneura mori*, *Psylla elaeagni*, could not be found during the survey. For the genus *Psylla* any species feeding on the plants of Betulaceae, such as *P. alni*, *P. hakonensis*, *P. hartigi*, did not come out either. Further investigation in the different season will be necessary to clarify which species is wanting in the fauna and to which species the season was out.

To consider the whole psyllid fauna of Sado Island, it is indispensable to investigate the northwest coast of the island ("Sotokaifu") in the future, where some subfrigid plants are mixed in the vegetation.

The specimens treated in this report will be kept in the collections of the Osaka Museum of Natural History and the senior author.

Before going further, the junior author wishes to express his appreciation to Dr. M. CHIJI and Mr. I. HIURA of the Osaka Museum of Natural History for their constant encouragement.

Subfamily APHALARINAE

1. *Aphalara itadori* (SHINJI, 1938)

Specimens examined : 1♂, 22. vii. 1970, K. Baba leg. ; 27♂ 24♀, 23. vii. 1970, Y. Miyatake leg. ; Akadama-sugiike, nr Mt. Kunimi, Ryōtsu City, on *Polygonum cuspidatum*.

Host plant confirmed : "Itadori" -*Polygonum cuspidatum* SIEB. et ZUCC. [Polygonaceae] .

General distribution : Japan (Hokkaido, Honshu, Sado I., Hachijyo Is., Shikoku, Kyushu) ; Amami-Oshima.

It is interesting to note that this species was found on *Polygonum cuspidatum* only at Akadama-sugiike, near Mt. Kunimi, of the southern mountain range ("Kosado") through the survey. Although the other host plant, "Ooitadori" -*Polygonum sachalinense* was abundant from Umezu up to Mt. Donden of the northern mountain range ("Oosado"), any material could not be obtained from this area. It possibly depends upon the fact that *P. cuspidatum* which seems to be the most suitable host plant to this psyllid is very scarcely growing in the northern mountain range so far the authors have observed. On the other hand, the difference of distribution both in this psyllid and the host plants between the northern and the southern mountain range seems to be more or less influenced by a climatic difference.

2. *Aphalara fasciata* KUWAYAMA, 1908

Specimens examined : 9♀, K. Baba leg. ; 18♂ 11♀, Y. Miyatake leg. ; Kokufubashi, lower Kokufu River, Mano-machi, Sado-gun, 22. vii. 1970, on *Polygonum japonicum*.

Host plant confirmed : "Shirobana-sakuratade" - *Polygonum japonicum* MEISN. [Polygonaceae] .

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku).

Many nymphs were still seen in the leaf margin roll galls of the above host plant. Another species of *Polygonum* were also investigated, but the result was negative.

3. *Aphalara polygona* FÖRSTER, 1848

Specimens examined : 3♂ 3♀, K. Baba leg. ; 3♂, Y. Miyatake leg. ; Kokufubashi, lower Kokufu River, Mano-machi, Sado-gun, 22. vii. 1970 on *Polygonum japonicum*.

Host plant confirmed : "Shirobana-sakuratade" - *Polygonum japonicum* MEISN. [Polygonaceae] .

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku) ; India, Himalayas, Europe, N. America.

This species was also collected on the host plant of the preceding psyllid, but distinctly less in number.

4. *Craspedolepta flava* (KUWAYAMA, 1908)

Specimens examined : 5♂ 16♀, 21. vii. 1970 ; 1♂ 1♀, 23. vii. 1970 ; middle Umezu River, Ryōtsu City, on *Artemisia* sp., Y. Miyatake leg.

Host plant confirmed : *Artemisia* sp. [Compositae] .

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku).

This rather montane species was found from a mugwort bush at only one place near the power plant located in middle-stream of the Umezu River, although the plants of *Artemisia* are commonly growing all over the island from lowland to higher altitude.

5. *Craspedolepta conspersa* (LÖW, 1888)

Specimen examined : 1♀, Kawamo-tōge, Akadomari-mura, Sado-gun, 22. vii. 1970, on *Artemisia* sp., Y. Miyatake leg.

Host plant confirmed : *Artemisia* sp. [Compositae] .

General distribution : Japan (Honshu, Sado I.) ; Europe.

The above unique specimen was collected by sweeping a mugwort bush. They seem to emerge earlier and disperse probably from the beginning of July leaving the host plant.

Subfamily LIVIINAE

6. *Diraphia jesoensis* (KUWAYAMA, 1908)

Specimens examined : 5♂ 3♀, Akadama-sugiike, nr Mt. Kunimi, Ryōtsu City, 22. vii. 1970, K. Baba leg.

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku, Kyushu) ; Korea.

Comparing with specimens from other localities of Japan, no apparent morphological

difference was noticed.

Subfamily PSYLLINAE

7. *Calophya shinjii* K. SASAKI, 1954

Specimens examined : 9♂ 5♀, 21. vii. 1970 ; 1♂, 23. vii. 1970 ; Mt. Donden, alt. ca. 900m, on *Cryptomeria japonica*, Y. Miyatake leg.

General distribution : Japan (Hokkaido, Honshu, Sado I.).

All adult specimens were collected from "Sugi" - *Cryptomeria japonica* specifically which were planted along the ridge of Mt. Donden and might be the good reservoir to this psyllid in summer and in winter, at such an windy shrubs of deciduous trees where evergreens are very scarce.

8. *Psylla jamatonica* KUWAYAMA, 1908

Specimens examined : 44♂ 27♀, Umezu, E. foot of Mt. Kinpoku, Ryōtsu City, 20. vii. 1970, on *Albizzia julibrissin*, Y. Miyatake leg. 8♂ 5♀, Irikuwa, Ryōtsu City, 21. vii. 1970, on *Albizzia julibrissin*, K. Baba leg. 7♂ 11♀, Kokufubashi, lower Kokufu River, Mano-machi, 22. vii. 1970, on *A. julibrissin*, Y. Miyatake leg. 2♂ 10♀, K. Baba leg. ; 2♂, Y. Miyatake leg. ; Shiroyama, Ogi-machi, Sado-gun, 22. vii. 1970, on *A. julibrissin*. 1♂ 3♀, 22. vii. 1970, K. Baba leg. ; 1♀, 23. vii. 1970, Y. Miyatake leg ; Akadama-sugiike, nr Mt. Kunimi, Ryōtsu City, on *A. julibrissin*. 1♀, Kawamo-tōge, Akadomari-mura, Sado-gun, 22. vii. 1970. on *A. julibrissin*, Y. Miyatake leg. 1♂ 2♀, Ohkawa, Ryōtsu City, 23. vii. 1970, Y. Miyatake leg.

Host plant confirmed : "Nemunoki" - *Albizzia julibrissin* DURAZZ. [Leguminosae].

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku, Kyushu).

This common psyllid could be obtained anywhere in the island where its host plant, a silk tree was. It may be pointed out, however, that a silk tree is usually wanting from the vegetation at high altitude in Sado Island.

9. *Psylla sasakii* Y. MIYATAKE, 1963

Specimens examined : 33♂ 41♀, Umezu, E. foot of Mt. Kinpoku, Ryōtsu City, 20. vii. 1970, on *Albizzia julibrissin* Y. Miyatake leg. 2♂ 2♀, Kokufubashi, lower Kokufu River, Mano-machi, Sado-gun, 22. vii. 1970, on *A. julibrissin*, Y. Miyatake leg. 1♂, Shiroyama, Ogi-machi, Sado-gun, 22. vii. 1970, K. Baba leg.

Host plant confirmed : "Nemunoki" - *Albizzia julibrissin* DURAZZ. [Leguminosae].

General distribution : Japan (Honshu, Sado I., Shikoku).

Psylla sasakii, which is also injurious to a silk tree as well as the preceding species, was collected from the three above-mentioned locations together with *P. jamatonica* on the same host trees.

10. *Psylla japonica* KUWAYAMA, Jr., 1955

Specimens examined : 2♂ 1♀, 21. vii. 1970 ; 2♂ 2♀, 23. vii. 1970 ; Mt. Donden, alt. ca. 900m, K. Baba leg.

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku, Kyushu).

Material was collected at only up the mountain, not at the low altitude.

11. *Psylla abieti* KUWAYAMA, 1908

Specimens examined : 12♂ 7♀ (*fl.*), 1♀ (*mg.*), 21. vii. 1970, on *Acer* spp., Y. Miyatake leg. ; 1♂ 4♀ (*fl.*), 23. vii. 1970, K. Baba leg. ; 1♂ (*fl.*), 23. vii. 1970, Y. Miyatake leg. ; Mt. Donden, alt. ca. 900m.

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku, Kyushu).

As mentioned about the materials from various parts of Niigata Prefecture, there are also two types of coloration in forewings of the present material ; the one is semitransparent and uniformly flavous, without a marginal band (shown with *fl.* in the above collecting record), and the other is almost transparent and with a brown band along the posterior margin from base to apex (shown with *mg.* in the above collecting record). The latter is slightly bigger and has forewing with longer cells.

12. *Psylla morimotoi* Y. MIYATAKE, 1963

Specimens examined : 1♂, Umezu, E. foot of Mt. Kinpoku, Ryōtsu City, 20. vii. 1970, on *Prunus grayana*, Y. Miyatake leg. 1♂, Akadama-sugiike, nr Mt. Kunimi, Ryōtsu City, 23. vii. 1970, on *P. grayana*, Y. Miyatake leg.

Host plant confirmed : "Uwamizuzakura" - *Prunus grayana* MAXIM. [Rosaceae].

General distribution : Japan (N. Honshu, Sado I.).

13. *Psylla coccinea* KUWAYAMA, 1908

Specimens examined : 3♂ 3♀, Umezu, E. foot of Mt. Kinpoku, Ryōtsu City, 20. vii. 1970, on *Akebia quinata*, Y. Miyatake leg. 1♂ 1♀, Irikuwa, Ryōtsu City, 21. vii. 1970, K. Baba leg. 3♀, 22. vii. 1970, K. Baba leg. ; 1♂, 23. vii. 1970, on *A. quinata*, Y. Miyatake leg. ; Akadama-sugiike, nr Mt. Kunimi, Ryōtsu City. 2♂ 8♀, K. Baba leg. ; 6♂ 10♀, on *A. quinata*, Y. Miyatake leg. ; 22. vii. 1970, Shiroyama, Ogi-machi, Sado-gun, 1♀, Kawamo-tōge, Akadomari-mura, Sado-gun, 22. vii. 1970, on *A. quinata*, Y. Miyatake leg. 1♂, Mt. Donden, alt. ca. 900m, 23. vii. 1970, K. Baba leg. 1♀, middle Umezu River (nr "Hatsudensho"), Ryōtsu City, 23. vii. 1970, on *A. quinata*, Y. Miyatake leg.

Host plant confirmed : "Akebi" - *Akebia quinata* (THUNB.) DECNE [Lardizabalaceae].

General distribution : Japan (Hokkaido, Honshu, Hachijyo Is., Sado I., Shikoku, Kyushu) ; Amami-Oshima, Taiwan.

14. *Psylla albigena* Y. MIYATAKE, 1964

Specimens examined : 1♂ 2♀, 21. vii. 1970, Y. Miyatake leg. ; 1♂ 1♀, 23. vii. 1970, K. Baba leg. ; 2♂, 23. vii. 1970, Y. Miyatake leg. ; Mt. Donden, alt. ca. 900m.

General distribution : Japan (Honshu, Sado I.).

This species was collected only at the ridge area of Mt. Donden which is about 900m in altitude.

15. *Psylla fulguralis* KUWAYAMA, 1908

Specimen examined : 1♀, Shiroyama, Ogi-machi, Sado-gun, 22. vii. 1970, on *Elaeagnus macrophylla*, Y. Miyatake leg.

Host plant confirmed : "Marubagumi" or "Oobagumi" - *Elaeagnus macrophylla* THUNB. [Elaeagnaceae] .

General distribution : Japan (Honshu, Sado I., Shikoku, Kyushu, Tsushima, Yakushima) ; Amami-Oshima, Okinawa I., Ishigaki Is., Iriomote Is.

The known northernmost locality where this psyllid was collected is Mt. Nonobori in Mie Prefecture. Thus, this species is recorded here from the northern Japan for the first time.

16. *Psylla hederæ* Y. MIYATAKE, 1964

Specimens examined : 4♂ 8♀, K. Baba leg. ; 6♂ 15♀, Y. Miyatake leg. ; Shiroyama, Ogi-machi, Sado-gun, 22. vii. 1970, on *Hedera rhombea*.

Host plant confirmed : "Kizuta" - *Hedera rhombea* BEAN [Araliaceae] .

General distribution : Japan (Honshu, Sado I., Shikoku, Kyushu, Tsushima).

This species has been known also from the western part of Japan only so far, and here recorded from the northern Japan for the first time. Considerable number of material were obtained at Shiroyama, Ogi-machi on the south coast of the island.

17. *Psylla pulchra* (ZETTERSTEDT, 1840)

Specimens examined : 7♂ 11♀, Umezu, E. foot of Mt. Kinpoku, Ryôtsu City, 20. vii. 1970, on *Salix* sp., Y. Miyatake leg.

Host plant confirmed : *Salix* sp. [Salicaceae] .

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku, Kyushu) ; Europe.

Subfamily TRIOZINAE

18. *Trioza nigra* KUWAYAMA, 1910

Specimens examined : 7♂ 5♀ (4♂ 3♀ teneral), Umezu, E. foot of Mt. Kinpoku, Ryôtsu City, 20. vii. 1970, on *Styrax japonica*, Y. Miyatake leg. 1♂ 1♀, 21. vii. 1970 ; 1♀, 23. vii. 1970 ; Mt. Donden, alt. ca. 900m, Y. Miyatake leg. 2♂ 1♀, Kawamo-tôge, Akadomari-mura, Sado-gun, 22. vii. 1970, Y. Miyatake leg.

Host plant confirmed : "Egonoki" - *Styrax japonica* SIEB. et ZUCC. [Styracaceae] .

General distribution : Japan (Hokkaido, Honshu, Hachijyo I., Sado I., Shikoku, Kyushu) ; Ryukyu Archipelago (Amami-Oshima, Okinoerabu Is., Okinawa I., Ishigaki I., Iriomote I.). Korea.

19. *Trioza magna* KUWAYAMA, 1910 (Fig. 2)

Specimens examined : 1♀, Mt. Donden, alt. ca. 900m, 23. vii. 1970, K. Baba leg. 14♂ 11♀, 21. vii. 1970 ; 4♂ 6♀, 23. vii. 1970 ; Mt. Donden, on *Symplocos coreana*, Y. Miyatake leg. 2♀, 22. vii. 1970, K. Baba leg. ; 1♂ 1♀, 23. vii. 1970, on *S. coreana*, Y. Miyatake leg. ; Akadama-sugiike, nr Mt. Kunimi, Ryôtsu City.

Host plant confirmed : "Tanna-sawafutagi" - *Symplocos coreana* (LÉV.) OHWI [Symplocaceae] .

General distribution : Japan (Honshu, Sado I., Shikoku) ; Philippines.

Many galls of this psyllid were observed on the host plant at Mt. Donden. Each gall is made by folding both sides of leaf apex as shown in Fig. 2. Galls are 1.0-1.7cm in length, more or less swollen and yellowish to pale green in color, sometimes tinted with red or violet partly.

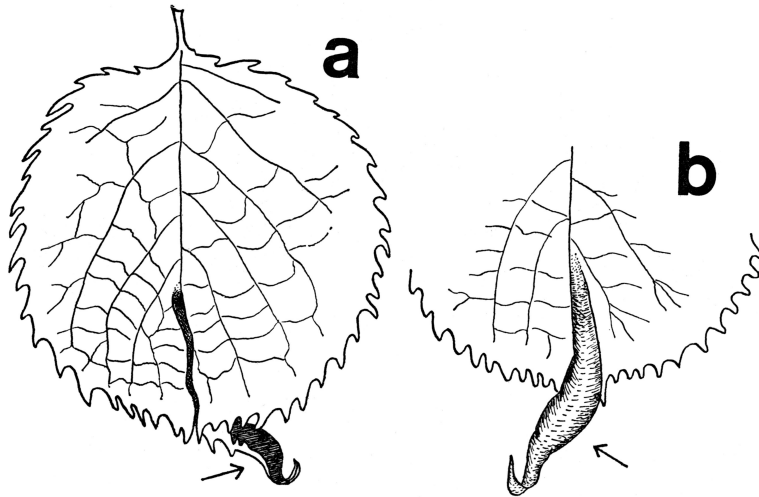


Fig. 2. Gall of *Trioza magna* KUWAYAMA on *Symplocos coreana*. a, dorsal surface ; b, under side.

20. *Trioza machilicola* Y. MIYATAKE, 1968

Specimens examined : numerous 2nd instars and galls, Ogi-machi, Sado-gun, 22. vii. 1970, on *Machilus thunbergii*, Y. Miyatake leg.

Host plant confirmed : "Tabunoki" - *Machilus thunbergii* SIEB. et ZUCC. [Lauraceae].

General distribution : Japan (Honshu, Sado I., Kyushu).

The host plant is remarkably abundant along the south coast of Sado Island, especially around Ogi-machi. Their leaves are heavily infested by nymphs of this triozone psyllid. Many galls with 2nd instars were obtained from the above-mentioned area.

21. *Trichohermes grandis* LOGINOVA, 1965 (Fig. 3)

Specimens examined : 1♂ 1♀, 21. vii. 1970 ; 2♂ 23. vii. 1970 ; Mt. Donden, alt. ca. 900m, on *Rhamnus japonica*, Y. Miyatake leg.

Host plant confirmed : "Kuroumemodoki" - *Rhamnus japonica* MAXIM. [Rhamnaceae].

General distribution : Japan (Sado I. - *hav. nov.*) ; Russian Far East (Primorsk. kray), China (Shansi).

This species has been unknown from Japan, and recorded here for the first time. The marking of forewing seems to be quite various in this species. Among four samples obtained from Sado Island, there are three types ; one with brown band along anterior and posterior margin of forewing, transparent along M (Fig. 3-a), one with

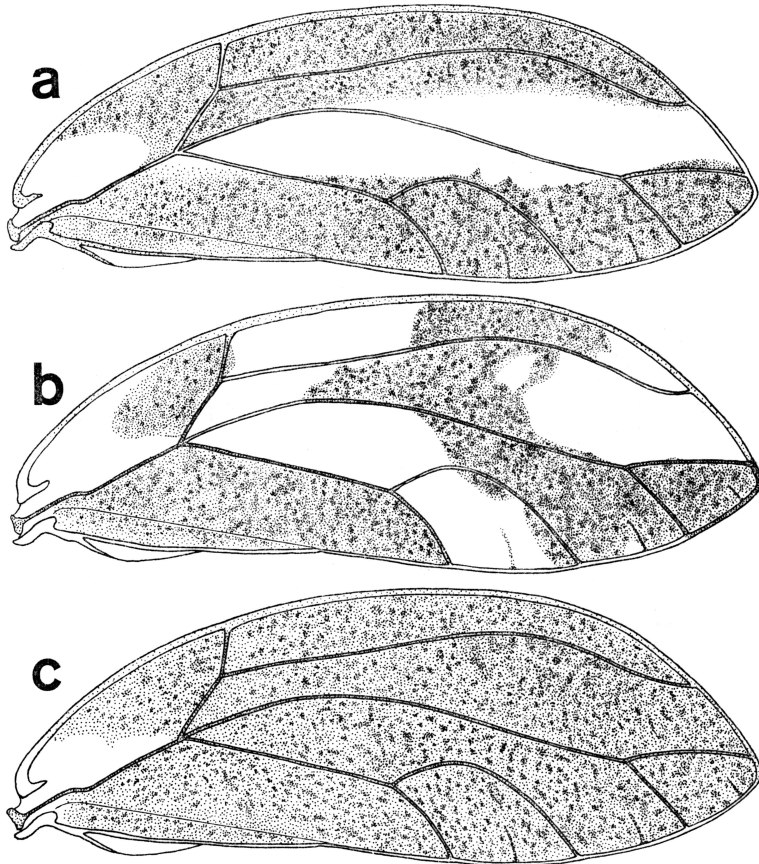


Fig. 3. Forewings of *Trichohermes grandis* LOGINOVA. a, with brown bands along anterior margin and posterior margin; b, with brown patterns basally and apically; c, entirely brown, with numerous dark spots.

irregular markings basally and apically as shown in Fig. 3-b, and two with forewings uniformly brown with numerous dark spots (Fig. 3-c).

22. *Trichohermes bicolor* KUWAYAMA, 1910

Specimen examined : 1♂, Akadama-sugiike, nr Mt. Kunimi, Ryōtsu City, 22. vii, 1970, K. Baba leg.

General distribution : Japan (Honshu, Sado I., Shikoku, Kyushu) ; Taiwan.

23. *Epitrioza mizuhonica* KUWAYAMA, 1910

Specimens examined : 3♂ 1♀, Akadama-sugiike, nr Mt. Kunimi, Ryōtsu City, 23. vii, 1970, on *Elaeagnus umbellata*, Y. Miyatake leg. 1♂, Kawamo-tōge, Akadomari-mura, Sado-gun, 22. vii, 1970, on *Elaeagnus multiflora*, Y. Miyatake leg.

Host plants confirmed : "Akigumi"-*Elaeagnus umbellata* THUNB. [Elaeagnaceae] .
"Natsugumi" - *Elaeagnus multiflora* THUNB. [Elaeagnaceae] .

General distribution : Japan (Hokkaido, Honshu, Sado I., Shikoku, Kyushu).

Numerous vacant galls were seen on both host plants. There were only a few

adults remained on the host trees. Possibly emergence occurred earlier and they almost went away leaving the host.

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